

Amendments to the Claims

1. (previously presented): A system for delivery and deposition of aerosolized masses, comprising:

an aerosol generator;

an upstream electro-optical mass concentration sensor, and a source of gas flow for transporting aerosols past said upstream electro-optical mass concentration sensor at a known upstream volumetric flow rate;

a deposition zone for collecting aerosols on or within a media;

a downstream electro-optical mass concentration sensor for measuring the mass concentration of aerosols uncollected in said deposition zone, and a conduit for transporting uncollected aerosols past said downstream electro-optical mass concentration sensor at a known downstream volumetric flow rate; and

a controller connected to said upstream and downstream mass concentration sensors and determining the net mass of aerosols collected within said deposition zone by integrating over time the product of mass concentration measured by said upstream electro-optical sensor and the known upstream volumetric flow rate minus the product of mass concentration measured by said downstream electro-optical sensor and the known downstream volumetric flow rate.

2. (previously presented): The system of claim 1, which further comprises an upstream volumetric flow rate sensor for determining the upstream volumetric flow rate, and wherein said controller is connected to said upstream volumetric flow rate sensor.

3. (previously presented): The system of claim 2, which further comprises a downstream volumetric flow rate sensor for determining the downstream volumetric flow rate, and wherein said controller is connected to said downstream volumetric flow rate sensor.

61  
4. (previously presented): The system of claim 1, wherein said aerosol generator comprises:

a metering pocket, with powder loaded into said metering pocket;

a jet for directing high velocity gas into said metering pocket so as to fluidize the powder and produce an expansive bolus; and

a mixing chamber into which the expansive bolus is directed.

5. (previously presented): The system of claim 4, wherein said metering pocket is a micropocket having a volume of the order of one cubic millimeter.

6. (previously presented): The system of claim 4, wherein said jet directs gas at a velocity approaching Mach 1 into said metering pocket.

7. (previously presented): The system claim 5, wherein said aerosol generator further comprises:

a powder chamber containing powder to be aerosolized;

a sealing gland separating said powder chamber and said mixing chamber; and wherein

said micropocket metering pocket comprises a microscop in the form of a plunger rod having a tip with said micropocket metering pocket formed within said tip, said plunger rod passing through powder in said powder chamber so as to load powder within said micropocket metering pocket and then engaging and penetrating said sealing gland.

8. (previously presented): The system of claim 5, wherein said aerosol generator, further comprises:

a body;

a powder pocket cylinder cavity within said body and a powder pocket cylinder within said powder pocket cylinder cavity, said powder pocket cylinder having an outer cylindrical surface

and a plurality of metering pockets formed within said cylindrical surface, and

a passageway within said body communicating with a metering pocket of said plurality when said metering pocket is in an active position so as to provide access to said metering pocket.

9. (previously presented): The system of claim 8, wherein said aerosol generator further comprises:

a metering cylinder cavity within said body and a rotating metering cylinder within said metering cylinder cavity, said rotating metering cylinder comprising an outer tube with first and second openings in the wall of said outer tube, said first opening being selectively alignable with said passageway communicating with said metering pocket; and wherein

said gas jet is within said outer tube and directs high velocity gas through said first opening into said metering pocket, thereby fluidizing powder which passes through said first opening into the interior of said outer tube and out through said second opening as an expansive bolus.

10. (previously presented): The system of claim 5, wherein said aerosol generator further comprises a megadose disc having a surface and a plurality of metering pockets formed in said surface.

11. (previously presented): The system of claim 1, wherein said aerosol generator comprises:

a source of a liquid solution of an active ingredient and a volatile solvent;

an atomizer for atomizing the solution to produce droplets from which the solvent evaporates to leave an expansive bolus of solute residue; and

a mixing chamber into which the expansive bolus is directed.

12. (previously presented): The system of claim 1, wherein said deposition zone comprises:

- a porous media collection element;
- an aerosol delivery tube positioned generally against an upstream side of said porous media collection element for delivering aerosols transported by a fluid; and
- a perforated support element positioned generally against a downstream side of said porous media collection element.

13. (previously presented): The system of claim 1 wherein said deposition zone comprises:

- an impactor plate;
- an impactor jet for directing aerosols transported by a fluid against said impactor plate for deposition thereon; and
- an output conduit for conveying away fluid and aerosols not deposited on said impactor plate.

14. (currently amended): The system of claim 1 wherein said deposition zone comprises:

- a mass delivery ~~section~~ section for loading an aerosolized mass into a removable drift tube; and
- a deposition section receiving said drift tube and including a source of displacement gas for directing the aerosolized mass over a deposition surface.

Claims 15-22 (canceled)

23. (currently amended): An aerosol generator for producing an aerosolized powder, said aerosol generator comprising:

- a metering pocket having a volume of the order of one cubic millimeter, with powder loaded into said metering pocket;
- a powder chamber containing powder to be aerosolized;
- a sealing gland separating said powder chamber and said mixing chamber;

said micropocket metering pocket comprising a microscop in the form of a plunger rod having a tip with said micropocket metering pocket formed within said tip, said plunger rod passing through powder in said powder chamber so as to load powder within said micropocket metering pocket and then engaging and penetrating said sealing gland,

a jet for directing high velocity gas into said metering pocket, so as to fluidize the powder and produce an expansive bolus; and

a mixing ~~changer~~ chamber into which the expansive bolus is directed.

Claims 24-27 (canceled)

28. (canceled)

29. (currently amended): ~~The A deposition zone of claim 28, wherein: for collecting aerosolized masses, comprising:~~  
a porous media collection element;

an aerosol delivery tube positioned generally against an upstream side of said porous media collection element for delivering aerosols transported by a fluid, said aerosol delivery tube having a tapered end;

a perforated support element positioned generally against a downstream side of said porous media collection element, said aerosol delivery tube has a tapered end; wherein said perforated support element is being cup-like in configuration with a tapered interior surface; and wherein

said porous media collection element is being cup-like in configuration having a tapered interior surface matching the tapered end of said aerosol delivery tube as the upstream side, and a tapered exterior surface matching the taper of said perforated support element as the downstream side.

30. (canceled)

31. (currently amended): The ~~deposition zone~~ system of claim ~~30~~ 13, wherein said impactor jet directs aerosols transposed by a gas at a velocity approaching Mach 1 against said impactor plate.

32. (canceled)

33. (currently amended): The ~~deposition zone~~ system of claim ~~32~~ 14, wherein said deposition surface is electrostatically charged for attracting aerosols.

34. (new): A system for delivery and deposition of aerosolized masses, comprising:

an aerosol generator;

an upstream electro-optical mass concentration sensor, and a source of gas flow for transporting aerosols past said upstream electro-optical mass concentration sensor at a known upstream volumetric flow rate;

a deposition zone for collecting aerosols on or within a media;

a controller connected to said upstream mass concentration sensor and determining the mass of aerosols delivered to said deposition zone by integrating over time the product of mass concentration measured by said upstream electro-optical sensor and the known upstream volumetric flow rate.

35. (new): A system for delivery and deposition of aerosolized masses, comprising:

an aerosol generator;

a source of gas flow for transporting aerosols;

a deposition zone for collecting aerosols on or within a media;

a downstream electro-optical mass concentration sensor for measuring the mass concentration of aerosols uncollected in said deposition zone, and a conduit for transporting uncollected

aerosols past said downstream electro-optical mass concentration sensor at a known downstream volumetric flow rate; and

b1 a controller connected to said downstream mass concentration sensor and determining the mass of aerosols not collected within said deposition zone by integrating over time the product of mass concentration measured by said downstream electro-optical sensor and the known downstream volumetric flow rate.

---